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1.0 Introduction

On behalf of TDY Industries, Inc. and TDY Holdings, LLC (TDY) and in conformance with the March 30, 2005 Record of Decision, Li Tungsten Corporation Superfund Site, Operable Unit Four - Glen Cove Creek, Nassau County, New York (2005 ROD) and the Consent Judgment, US v. AGI-VR/Wesson, et al. of 2007 (Judgment), URS Corporation, Inc. and Safety and Ecology Corporation (URS/SEC) have prepared this Remedial Action Report (RAR) for implementation of the 2005 RA Work Plan as required under Paragraph IX.3.b of the Judgment. This RAR includes a summary of the remediation activities, time frames, quantity of material screened and segregated, field modifications and their rationale, cleanup levels achieved, materials and/or equipment used, post-excavation activities, and all other Site restoration activities for implementation of the 2005 RA Work Plan as described in the Judgment. The requirements for the report, as described in the Judgment, are as follows

- Documentation verifying that the performance standards of the Judgment have been met;
- Synopsis of work performed under the Judgment;
- Description of USEPA-approved modifications to the Remedial Action Work Plan;
- Listing of the quantities and types of waste materials removed from the site;
- Discussion of the removal, treatment, and disposal options considered for the waste materials;
- Listing of the ultimate destination of the waste materials;
- Presentation of the analytical results of all sampling and analysis performed, including QA/QC data and chain-of-custody records;
- Appendices containing all relevant documentation generated during the work;
- Accounting of expenses incurred by the Respondents at the site;
- Description of punch list items from the pre-final inspection and the resolution of the items; and
- Respondent’s certification statement.

This report has been formatted to provide the information required by the Judgment in a logical manner. Chapter 2.0 presents pertinent site background information, Chapter 3.0 summarizes the removal activities performed, and Chapter 4.0 identifies the quantity of material removed. The radiological survey and sampling results are presented in Chapter 5.0 with the accompanying quality assurance matters discussed in Chapter 6.0. Appendix A to the report contains the 'lift reports' prepared to document the as-left radiological conditions of the segregated material. Appendix B contains all dredge spoil lift and final status survey laboratory analytical reports. Appendix C presents the final status survey protocol and Appendix D contains the individual final status survey unit reports. Appendix E contains air sample results. Appendix F contains the project photographs.

2.0 Site Background

The Li Tungsten Superfund Site is located in the City of Glen Cove, Nassau County, New York, and includes the former Li Tungsten Corporation facility at Herbhill Road and Dickson Lane (see Figure 1). As a result of processing of ores at the facility on the Li Tungsten property, and the subsequent disposal of portions of the byproducts of that processing, elevated levels of radiation and certain metals have come to be present at or in the vicinity of the Li Tungsten property. The property is approximately 26 acres.

In September 2000, the U.S. Army Corps of Engineers (USACE) commenced a navigational dredging project in Glen Cove Creek, which is adjacent to the Li Tungsten property. In 2002, approximately 29,130 cubic yards of material were dredged from the creek and scanned to segregate less than two cubic yards of radiologically impacted material which was secured in the Dickson Warehouse on Parcel C for eventual disposal. The City disposed of approximately 29,128 cubic yards of screened, non-impacted sediment after segregation activities.

Based upon an evaluation of the various alternatives, EPA and the State of New York selected remedial dredging for the contaminated materials remaining in Glen Cove Creek. The selected remedy included dredging of those portions of the Creek's navigational channel which fall within the project area to the maintenance depth of eight feet, with two feet allowable overdepth, followed by dredging radionuclide hot spots in the project area which are detected beyond the USACE's maintenance specification for the channel, followed by segregation and off-site disposal of radioactive material from the dewatered dredged sediments (2005 ROD).

3.0 Summary of Plans/Protocols

Various plans and/or protocols were submitted for approval prior to and during dredge spoil dewatering, screening, and segregation activities. The plans and/or protocols submitted for approval were the RAWP, the Final Status Survey Protocol, and the Truck Pre-Transportation Release Plan.

The RAWP was submitted prior to the commencement of site activities. The chronological events leading to approval of the RAWP is as follows.

- A draft Remedial Action Work Plan was submitted on August 1, 2007 to the USEPA, NYSDEC, USACE, and City of Glen Cove for review.
- Partial approval by the USEPA of the RAWP concerning mobilization and dewatering activities was received on August 8, 2007 to permit mobilization to the site on August 13, 2007.
- Comments were received August 16 through August 24, 2007 from the various government agencies and the City of Glen Cove.
- Final acceptance of the revised RAWP was received on August 28, 2007 at which time URS mailed hard copies to the parties.

The Final Status Survey Protocol (Appendix C) was submitted approximately six weeks into the project. The sequence of actions leading to approval is provided below.

- A draft Final Status Survey Protocol was submitted to the USEPA on October 2, 2007 for review.
- Comments were received from the USEPA on October 4, 2007.
- Response to USEPA comments were submitted on October 4, 2007.
- Acceptance of the revised Final Status Survey Protocol was received on October 12, 2007.

A truck, pre-transportation release protocol was developed to support the unrestricted release of trucks prior to transporting impacted materials from the site. The Truck Pre-Transportation Release Plan (Appendix D of the Dickson Warehouse Work Plan) was submitted for approval as follows:

- A draft of the Unrestricted Release Protocol was submitted to the USEPA for review on October 29, 2007.
- On November 9, 2007, the USEPA approved the protocol.

Finally, all equipment and structural surfaces, including debris encountered during excavations, were surveyed to demonstrate compliance with acceptance criteria established for the site (surface contamination limits of Regulatory Guide 1.86, as incorporated by Nuclear Regulatory Commission

Policy and Guidance Directive FC 83-23). The following tables summarize the acceptance criteria applicable to the site and used in the protocols.

Table 1 - Activity Concentration in Dredge Spoils, Soil and Soil-Like Materials

Radionuclides	Criteria
Th-232 + Th-230	5 pCi/g combined above 1 pCi/g background for each radionuclide
Ra-226 + Ra-228	5 pCi/g combined above 1 pCi/g background for each radionuclide

Table 2 - Truck Pre-Transportation Survey Criteria (Per 49 CFR 173.441)

Package Dose Rate Limit	**ON CONTACT** 200 mrem/hour	**AT 2 METERS** 10 mrem/hour	
Vehicle Dose Rate Limits for Exclusive Use Shipments	**ON CONTACT** 200 mrem/hour	**AT 2 METERS** 10 mrem/hour	**NORMALLY OCCUPIED SPACE** 2 mrem/hour
Transferable Contamination Limits	**ALPHA /100 cm^2** 2200 dpm/100 cm^2	**BETA-GAMMA/100 cm^2** 2200 dpm/100 cm^2	
Transferable Contamination Limits for Materials Containing Ra-226 in Excess of U-238	**ALPHA /100 cm^2** 220 dpm/100 cm^2	**BETA-GAMMA/100 cm^2** 220 dpm/100 cm^2	

Table 3 - Acceptable Surface Contamination Levels for Unrestricted Release

Radionuclide	Total Contamination (dpm/100cm^2)	Max Total Contamination (dpm/100cm^2)	Removable Contamination (dpm/100cm^2)
Alpha (Ra-226, Ra-228 and Th-230)	100	300	20
Beta (Th-232 and progeny)	1,000	3,000	200

4.0 Summary of Work Performed

The following section provides a synopsis of work performed for the 2005 RA Work Plan under the Judgment. All work was conducted in accordance with the approved Remedial Action Work Plan for the Segregation and Management of Dredge Spoils (RAWP).

4.1 Methodical Screening Process

As described in the RAWP, the following methodology, based on the available characterization data and the guidance of NUREG-1575, EPA 402-R-97-016, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), was implemented to screen the dredge spoils:

(1) Standing water accumulated at the site was removed by URS and discharged into Glen Cove Creek prior to the start of screening and segregation operations. Prior to discharge, the water was filtered through a 10 micron multi-media or bag filter. URS utilized the multi-media filter for normal pumping operations and used the bag filters when multiple pumps were required for dewatering after a significant rain event.

(2) The dredge spoils were dewatered to the extent possible and staged in order to facilitate radiological screening with hand-held instrumentation. This was done by creating sumps inside the diked area to act as collection points for pumping to the creek. A channel was created through the center (north to south) and sumps excavated in the southeast and southwest corners of the diked area. Additional localized sumps were excavated as needed to dewater the dredge spoils. The water pumped from these locations was pumped to the two main sumps located in the corners of the diked area. The dewatering operation continued as needed throughout the screening process, given the generally wet condition of the material.

(3) An approximate 6-inch layer of material was spread in the prepared survey laydown area within Parcel A (See Figure 2). Initial lifts of material were small (as little as 375 square meters) and approached the maximum size (2,000 square meters) of a MARSSIM Class 1 survey unit as the project progressed and more laydown area became available.

(4) Ambient radiological background conditions, in gross counts per minute (cpm) as measured with a 2-inch-by-2-inch sodium iodide (NaI) detector and rate meter, were determined for the survey laydown area.

(5) The scan survey Minimum Detectable Concentration (MDC), in picocuries per gram (pCi/g) for both Radium-226 (Ra-226) and Thorium-232 (Th-232), was calculated based on the gross cpm background measured. The calculation was made using the formulas provided in Chapter 6 of MARSSIM.

(6) The survey laydown area was surveyed at 100-percent surface coverage with NaI field survey meters. The meters can respond to radiation emitted from a depth of 6 inches, the depth that was maintained in the survey laydown area. Specific searches for discrete pieces of material or accumulations of material that exceeded 5 pCi/g-equivalent above the measured background as specified in the RAWP were performed during the survey. The above action level (AAL) material identified during the survey was physically segregated and staged in a 55-gallon drum for subsequent disposal.

(7) The minimum number of samples required to evaluate the remaining material in the survey laydown area was calculated based on the scan MDC using MARSSIM guidance. The number of 'MARSSIM' samples required was based on a 0.05 target value for alpha and beta detection errors, the 5-pCi/g performance standard, and the anticipated standard deviation of the analytical results for samples approaching background activity concentrations of Ra-226 and Th-232. The minimum number of 'MARSSIM' samples thus calculated was nine (9). The scan MDC did not exceed the performance standard. The required nine surface samples of the material remaining following segregation were systematically obtained beneath the nodes of a fixed triangular grid placed over the material. Additional samples (duplicates) were also taken for quality control purposes (see section 6.0).

(8) The gross and net (background subtracted) radioactivity in all 'MARSSIM' samples was initially assessed (screened) in an onsite laboratory using a 2-inch-by-2-inch NaI detector housed in a lead shielded "cave" to optimize the screening protocol. Radioactivity data obtained from these counts was used to infer compliance with the 5-pCi/g performance standard by comparing the count results with the previously established radioactivity correlation to the performance standard. When the screening results for all nine samples were verified to be below the inferred performance standard, the material in the survey laydown area was deemed acceptable pending laboratory confirmation (see below). Acceptable material was moved and accumulated in the below action level (BAL) material staging area.

(9) Laboratory confirmation of the sample yielding the highest screened radioactivity result in each set of nine samples was performed using gamma spectrometry. There were no instances where confirmation results exceeded the performance standard necessitating material re-segregation and re-sampling.

(10) The laboratory and material scan results were incorporated in 'lift reports' to document that the material moved to the BAL material staging area met the performance standard. Copies of the lift reports are in Appendix A.

4.2 Material Staging Strategy

AAL material was placed in a 55-gallon storage drum located in the northwest portion of the work area within Parcel A. The drum was identified with signage indicating AAL status and access was restricted to authorized site personnel only. The AAL drum storage area was demarcated with a barrier to restrict access to the material to authorized site personnel only. The AAL material storage drum was later moved to the Dickson warehouse pending offsite disposal.

BAL material staging areas were developed as needed during the screening and segregation process. Areas could be utilized for staging after dredge material in the area was segregated and the area was released. As provided in Figure 2, the BAL material piles were contained by a perimeter berm and/or silt fence to prevent storm water and/or sediment runoff. The BAL material was left uncovered pending removal by the City of Glen Cove.

4.3 Operation Sequence

A single survey area was used to implement the segregation protocol. Each survey lift was evaluated using the same operational protocol. An appropriate amount of dredge spoils (from 75 to 360 cubic yards for each lift) was obtained from the material staged to the east, west, and south of the survey area and spread using two dozers, a loader, and excavator within the available survey area in a 6-inch lift. The material was surveyed as described above in the methodical screening process. AAL material was removed with dedicated shovels or hand tools and placed in the AAL 55-gallon drum. The remaining material was then sampled for screening and laboratory analysis as described above. When BAL status was confirmed by surveying and screening results, the segregation effort for the survey unit was tentatively deemed complete and the BAL material was removed with the two dozers, a loader, and excavator to one of the BAL material staging areas pending laboratory results. The vacated material survey laydown area was then available for the next segregation/survey cycle.

After stockpiled material was surveyed and screened, and sections of the bermed area within Parcel A were exposed, URS/SEC performed final status surveys for unrestricted release of the exposed area of Parcel A. The MARSSIM based final status survey protocol addressed the unique physical features of the Parcel A area within the berm and the berm itself. The protocol is included as Appendix C of this report.

4.4 Water Management

Water collected and pumped during the dewatering and material segregation phases was filtered through a 10 micron mixed media filter or bag filter prior to discharge into Glen Cove Creek. URS utilized the multi-media filter for normal pumping operations and used the bag filters when multiple pumps were required for dewatering after a significant rain event.

4.5 Deviations from RAWP

URS was required to develop additional areas to stage BAL material because the City of Glen Cove did not remove BAL material off-site during the course of the screening and segregation process. As described in the RAWP, based upon their understanding that the City of Glen Cove would remove BAL material off-site during the course of the screening and segregation process, URS anticipated using just the area north of the bermed area to stage released BAL material. However, because the City of Glen Cove did not remove BAL material off-site during the course of the screening and segregation process, URS also staged BAL material in areas north, east, and west of the bermed area, as well as in areas at the east and west ends inside the bermed area.

URS was also required to perform a MARSSIM based final status survey of the as-left surface of Parcel A, once stockpiled dredge spoils had been removed. A summary of the final status survey activities and the results are provided in Section 5.2.

5.0 Quantity of Material Removed

URS/SEC, during a two-month period of the project from September 3 to November 11, 2007, segregated approximately 31,374 cubic yards of material. This quantity was approximately 12% more than the anticipated quantity of 28,000 cubic yards described in the RAWP.

To perform the segregation operation, 87 lifts were surveyed, segregated, and stockpiled. Each lift averaged 360.6 cubic yards of material. Based on the 45.67 working days the segregation operation took to complete, URS/SEC averaged approximately 1.9 lifts per day. URS/SEC anticipated the screening and segregation of approximately 623 cubic yards per day. URS/SEC exceeded this expectation by 10%.

Project Dates For Segregation Activities	Cubic Yards Segregated during the Period	Total Cubic Yards for the Parcel A Project
Sept. 3 to Sept. 15, 2007	1,825	1,825
Sept. 16 to Sept. 30, 2007	8,075	9,900
Oct. 1 to Oct. 15, 2007	6,545	16,445
Oct. 16 to Oct. 31, 2007	7,700	24,145
Nov. 1 to Nov. 11, 2007	7,229	31,374

During the segregation process, URS/SEC generated one (1) 55-gallon drum containing less than 0.14 cubic yards of radiologically impacted material. The drum of material was blended into the radiologically contaminated soil previously staged in the Dickson Warehouse and shipped off site for disposal at US Ecology Idaho.

The approximately 31,374 cubic yards of non-radiological soil is expected to be removed from Parcel A by the City of Glen Cove, New York.

URS also pumped, filtered, and discharged standing water located on the Parcel A site during all or a portion of 21 project days. URS/SEC experienced significant rainfall events at various times during the project.

6.0 Survey and Sampling Results

6.1 Spoils Segregation

The screening process used to segregate radiologically contaminated material from the dredge spoils (completed in accordance with the RAWP) utilized a single laydown area. The laydown area was located in the northern portion of the bermed area, centrally located east to west (See Figure 2). The survey area was initially small (as little as 375 square meters) and later approached the maximum size (2,000 square meters) of a MARSSIM Class 1 survey unit. A total of 87, 6-inch lifts of material were processed in the laydown area.

6.1.1 Gamma Survey

Surveying of the dredge spoils commenced on September 3, 2007 and was completed on November 11, 2007. As described above, a single laydown area was utilized and the material was placed at a depth of approximately 6-inches. Using the sodium iodide detectors specified in the RAWP, radiological material was removed from each lift, as required, and placed in a storage drum. The results of the gamma scan readings for each lift are contained within the lift reports located in Appendix A. Background readings were taken for each lift. After confirming that the scan results were indicative of background levels for each lift (i.e., the remaining spoils did not contain AAL material), a sampling event was performed.

6.1.2 Sampling

Nine representative dredge spoils samples were collected from each lift utilizing an equal-distance sampling event. The samples were screened on site in a lead cave with a 2-inch-by-2-inch sodium iodide detector. The screening results of each sampling event are contained within the lift reports located in Appendix A. The sample with the highest screening result was forwarded to Pace Analytical Services, Inc. Waltz Mill Laboratory for gamma spectroscopy analysis.

The results of the gamma spectroscopy analytical reports were used to evaluate the samples against the ROD acceptance criteria as follows. Th-230 and Ra-226 are both members of the uranium natural decay series. The uranium natural decay series includes U-238, the long-lived parent, and 13 progeny radionuclides all in secular equilibrium (all have equal activity concentrations). During industrial processing of ores containing natural uranium and thorium, progeny are separated from the series and equilibrium is interrupted. Decay and in-growth begin immediately and over long periods of time the progeny return to equilibrium. Th-230 is the long-lived parent of Ra-226. Assuming secular equilibrium of the uranium decay series of which Th-230 and Ra-226 are members, the activity of Th-230 is equal to

the activity of Ra-226. Past characterization samples consistently show Th-230 activity is significantly higher than Ra-226. Therefore, the gamma spectroscopy reported result for Th-230 is likely an overstatement of the activity of Ra-226. For simplicity, the report result for Th-230 is conservatively used to represent the activity of both Th-230 and Ra-226. Likewise, Th-232, Ra-228 and Ac-228 are all members of the thorium natural decay series with Th-232 being the long lived parent of Ra-228 and Ac-228. Assuming secular equilibrium of the thorium decay series of which Th-232, Ra-228 and Ac-228 are members, the activity of Th-232 is equal to the activity of Ra-228 and Ac-228. Therefore, the gamma spectroscopy reported result for Ac-228 (the most prominent gamma emitter in the series) is used to represent the activity of both Th-232 and Ra-228. The following table summarizes the analytical results for each laydown area.

Table 4 - Analytical Summary (87-Lifts)

Total Activity (pCi/g – wet)	Minimum	Maximum	Average	Standard Dev.
Th-230/Ra-226	0.192	3.89	1.93	0.790
Th-232/Ra-228/Ac-228	0.465	3.13	0.874	0.329

Each of 87 samples analyzed for specific radionuclide activity concentrations met the ROD standard of 5 pCi/g combined Th-232 and Th-230 above a background of 1 pCi/g for each and 5 pCi/g combined Ra-226 and Ra-228 above a background of 1 pCi/g each. A list of key radionuclide analytical results are shown in Table 5. The complete analytical reports are located in Appendix B.

Table 5 – Spoils Sample Gamma Spectroscopy Key Analytical Results (pCi/g)

Sample ID	Lift	Th-230 / Ra-226			Th-232 / Ra-228 / Ac-228		
		Result (pCi/g)	Unc. (pCi/g)	MDC (pCi/g)	Result (pCi/g)	Unc. (pCi/g)	MDC (pCi/g)
LTSOIL07-011	1	2.47	0.774	1.22	0.699	0.104	0.137
LTSOIL07-017	2	3.13	0.784	1.19	1.260	0.340	0.309
LTSOIL07-032	3	1.18	2.18	3.43	0.668	0.047	0.052
LTSOIL07-039	4	0.302	2.88	4.20	0.769	0.049	0.061
LTSOIL07-052	5	1.90	1.06	0.364	0.812	0.083	0.017
LTSOIL07-060	6	1.45	1.95	0.964	1.00	0.135	0.029
LTSOIL07-068	7	1.71	1.24	0.595	0.837	0.081	0.015
LTSOIL07-075	8	1.79	1.38	0.659	0.859	0.090	0.018

Sample ID	Lift	Th-230 / Ra-226			Th-232 / Ra-228 / Ac-228		
		Result (pCi/g)	Unc. (pCi/g)	MDC (pCi/g)	Result (pCi/g)	Unc. (pCi/g)	MDC (pCi/g)
LTSOIL07-086	9	1.66	1.40	0.674	1.04	0.101	0.018
LTSOIL07-091	10	3.85	1.23	0.853	1.68	0.171	0.031
LTSOIL07-102	11	3.02	1.43	0.908	0.620	0.276	0.103
LTSOIL07-110	12	0.264	0.487	0.860	1.12	0.213	0.055
LTSOIL07-123	13	3.48	1.45	0.668	1.00	0.183	0.055
LTSOIL07-132	14	1.21	0.724	0.823	1.17	0.210	0.057
LTSOIL07-139	15	2.11	1.11	0.561	1.14	0.158	0.029
LTSOIL07-146	16	1.18	0.773	0.731	0.832	0.147	0.019
LTSOIL07-160	17	1.32	1.78	0.873	0.924	0.119	0.023
LTSOIL07-165	18	1.31	0.783	0.764	0.930	0.192	0.056
LTSOIL07-173	19	2.28	1.65	0.943	1.26	0.248	0.069
LTSOIL07-185	20	2.20	0.944	0.633	0.826	0.192	0.059
LTSOIL07-196	21	2.37	1.64	0.783	1.29	0.222	0.029
LTSOIL07-200	22	1.87	1.22	0.837	0.913	0.204	0.057
LTSOIL07-211	23	2.08	1.32	0.688	1.18	0.164	0.005
LTSOIL07-219	24	1.43	1.87	0.914	0.953	0.138	0.031
LTSOIL07-228	25	0.704	0.869	0.757	0.653	0.175	0.063
LTSOIL07-238	26	2.62	0.934	0.605	0.882	0.188	0.066
LTSOIL07-248	27	2.30	0.879	0.597	0.910	0.166	0.036
LTSOIL07-251	28	2.02	1.16	0.578	0.775	0.116	0.048
LTSOIL07-260	29	1.68	2.19	1.07	0.904	0.124	0.030
LTSOIL07-276	30	2.24	1.15	0.571	1.02	0.146	0.021
LTSOIL07-286	31	2.72	0.915	0.610	1.05	0.179	0.033
LTSOIL07-295	32	2.25	1.26	0.850	0.755	0.200	0.083
LTSOIL07-296	33	1.92	1.18	0.815	0.762	0.204	0.067
LTSOIL07-312	34	1.50	1.06	0.733	0.804	0.180	0.056
LTSOIL07-320	35	2.12	1.37	0.686	0.977	0.162	0.035
LTSOIL07-330	36	1.35	0.481	0.520	1.14	0.164	0.031
LTSOIL07-348	37	1.54	1.39	0.966	0.603	0.206	0.069
LTSOIL07-356	38	1.70	1.29	0.786	0.793	0.195	0.064
LTSOIL07-377	39	2.18	1.28	0.865	0.870	0.246	0.080

Sample ID	Lift	Th-230 / Ra-226			Th-232 / Ra-228 / Ac-228		
		Result (pCi/g)	Unc. (pCi/g)	MDC (pCi/g)	Result (pCi/g)	Unc. (pCi/g)	MDC (pCi/g)
LTSOIL07-384	40	2.19	1.19	0.814	0.695	0.175	0.064
LTSOIL07-390	41	2.54	1.17	0.787	0.665	0.215	0.079
LTSOIL07-399	42	2.38	1.41	0.961	0.753	0.194	0.092
LTSOIL07-408	43	2.52	1.51	0.991	0.568	0.224	0.107
LTSOIL07-419	44	2.65	1.20	0.809	0.806	0.192	0.058
LTSOIL07-425	45	3.58	1.36	0.660	0.780	0.203	0.066
LTSOIL07-437	46	0.459	0.602	0.670	3.13	0.254	0.034
LTSOIL07-442	47	1.60	1.06	0.737	0.922	0.181	0.031
LTSOIL07-454	48	1.99	1.45	0.684	0.583	0.171	0.051
LTSOIL07-463	49	2.36	1.39	0.922	0.904	0.234	0.089
LTSOIL07-476	50	1.37	1.24	0.858	0.686	0.202	0.070
LTSOIL07-481	51	1.87	0.968	0.658	0.783	0.131	0.055
LTSOIL07-496	52	0.192	1.69	0.858	1.52	0.215	0.052
LTSOIL07-500	53	0.987	1.20	0.961	0.874	0.219	0.048
LTSOIL07-514	54	2.02	1.26	0.889	0.585	0.207	0.071
LTSOIL07-516	55	1.66	1.80	0.874	0.885	0.111	0.020
LTSOIL07-531	56	2.24	1.53	0.781	0.753	0.180	0.053
LTSOIL07-541	57	2.16	0.846	0.573	0.993	0.138	0.039
LTSOIL07-552	58	2.26	0.775	0.520	0.988	0.148	0.029
LTSOIL07-562	59	2.08	0.752	0.511	0.849	0.144	0.027
LTSOIL07-575	60	3.19	1.93	0.869	0.578	0.204	0.111
LTSOIL07-587	61	2.32	1.50	0.998	0.763	0.299	0.109
LTSOIL07-591	62	2.14	0.983	0.668	0.856	0.186	0.057
LTSOIL07-602	63	2.62	1.49	0.952	0.613	0.273	0.110
LTSOIL07-610	64	2.65	1.42	0.929	0.637	0.261	0.090
LTSOIL07-618	65	2.60	1.43	0.644	0.587	0.200	0.068
LTSOIL07-626	66	2.09	1.20	0.832	0.576	0.194	0.057
LTSOIL07-639	67	2.19	0.962	0.659	0.557	0.152	0.053
LTSOIL07-651	68	0.800	0.866	0.718	0.764	0.179	0.057
LTSOIL07-668	69	3.08	1.28	0.846	0.889	0.251	0.073
LTSOIL07-677	70	0.365	0.713	0.753	0.820	0.152	0.029

Sample ID	Lift	Th-230 / Ra-226			Th-232 / Ra-228 / Ac-228		
		Result (pCi/g)	Unc. (pCi/g)	MDC (pCi/g)	Result (pCi/g)	Unc. (pCi/g)	MDC (pCi/g)
LTSOIL07-681	71	0.360	1.83	0.936	0.761	0.108	0.020
LTSOIL07-694	72	1.67	1.19	0.824	0.465	0.183	0.072
LTSOIL07-699	73	1.68	1.25	0.839	0.566	0.218	0.077
LTSOIL07-717	74	2.74	1.42	0.924	0.527	0.201	0.094
LTSOIL07-731	75	0.606	0.635	0.729	0.553	0.154	0.049
LTSOIL07-739	76	1.15	0.808	0.712	0.984	0.165	0.036
LTSOIL07-745	77	3.89	1.20	0.749	0.804	0.224	0.071
LTSOIL07-754	78	1.79	0.993	0.689	0.561	0.180	0.061
LTSOIL07-761	79	1.62	1.09	0.741	0.833	0.178	0.048
LTSOIL07-774	80	2.28	2.07	0.982	0.938	0.128	0.024
LTSOIL07-790	81	2.21	1.10	0.738	0.985	0.166	0.009
LTSOIL07-795	82	0.415	1.78	0.904	0.785	0.116	0.024
LTSOIL07-809	83	1.67	1.19	0.754	0.613	0.249	0.093
LTSOIL07-824	84	1.99	2.62	1.27	0.698	0.131	0.036
LTSOIL07-836	85	1.80	0.837	0.574	0.935	0.139	0.027
LTSOIL07-856	86	2.16	1.23	0.839	0.778	0.222	0.074
LTSOIL07-864	87	2.23	1.09	0.536	1.17	0.152	0.020

6.2 Final Status Survey of Parcel A

A final status survey of the surface of the bermed area (including the berms) was performed after the pre-segregated dredge spoils were removed. As noted above, because the City of Glen Cove did not remove BAL material off-site during the course of the screening and segregation process, URS also staged BAL material in the east and west ends inside the bermed area. Since portions of the bermed area were used to stockpile BAL material before all segregation was completed, the final status survey of the bermed area was performed incrementally. Before a portion of the bermed area was used to stockpile BAL material, the final status survey of that area was performed.

The protocol used for the final status survey is included in this report as Appendix C. There were two minor deviations from the Appendix C protocol, both resulting from the need to perform the final status survey incrementally. First, the gross gamma survey was performed without coupling with a global positioning system (GPS). The original plan for the final status survey of the bermed area of Parcel A

assumed the entire area would be cleared of all spoils, both pre-segregated and BAL material. Once this was accomplished a specialized survey system consisting of both a gross gamma detector and a GPS system, coupled to a data logger would be mobilized to the site and used to map the entire bermed area of Parcel A. This system produces coordinates (northing and easting) coupled to gross gamma scan results in units of counts per minute. Since portions of the bermed Parcel A area had to be used to store BAL material after the pre-segregation spoils had been removed, final status surveying of these portions was required prior to the availability of the gross gamma/GPS system. For this final status survey, gross gamma scans were recorded manually using a 10-meter by 10-meter grid system to record gross gamma scan results. The intention of the final status survey scan, to identify any remaining areas of elevated activity or pieces of radioactive slag was still met.

The second minor deviation was the survey of the berm. The protocol specified the berm as a separate survey unit. However, the reuse of the bermed area to stockpile BAL material required that adjacent portions of the berm be surveyed concurrently. So, rather than have multiple survey units of the berm, berm areas were included in the adjacent survey units for the surface of the bermed area. Therefore, a minimum of nine equal-distant samples of the Parcel A surface and a minimum of nine equal-distant samples of the adjacent berm where taken in each final status survey unit. All of the samples were screened for gross gamma activity onsite and the highest result from each set of samples (surface and berm) was forwarded to Pace Labs for gamma spectroscopy analysis.

The bermed area, including the berm, was divided into six survey units: FSS-SP-001 through FSS-SP-006. In addition, the contamination reduction zone (CRZ) was surveyed (survey unit FSS-Contamination Reduction Zone) after all the spoils had been segregated and the zone was no longer required.

The results of the final status survey measurements for these seven final status survey units are presented, by survey unit, in Appendix D. The site acceptance criteria applicable to the final survey are:

- Radium and Thorium in Soil - the sum of fractions calculation for thorium and for radium are applicable independently:

  $(\text{Th-232} / 6) + (\text{Th-230} / 6) < 1$ $(\text{Ra-226} / 6) + (\text{Ra-228} / 6) < 1$

- Removable Contamination - < 20 dpm/100cm^2 alpha and < 200 dpm/100cm^2 beta, applied independently (based on the most restrictive removable contamination limits presented in FC 83-

23, Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source or Special Nuclear Material, USNRC 1993)

All of the soil samples were less than the radium and thorium activity concentration acceptance criteria for the site. The analytical results of the final status survey samples are presented in the following table.

Table 6 – Final Status Survey Sample Gamma Spectroscopy Key Analytical Results (pCi/g)

Sample ID	Survey Unit, Location	Th-230 / Ra-226			Th-232 / Ra-228 / Ac-228		
		Result (pCi/g)	Unc. (pCi/g)	MDC (pCi/g)	Result (pCi/g)	Unc. (pCi/g)	MDC (pCi/g)
LTSOI L07-333	FSS-SP-01, grid A2	3.15	1.37	0.992	0.916	0.143	0.044
LTSOI L07-362	FSS-SP-01, grid C2b	3.00	1.97	0.610	0.891	0.159	0.033
LTSOI L07-712	FSS-SP-02, grid C7	2.39	1.19	0.807	0.673	0.209	0.063
LTSOI L07-714	FSS-SP-02, grid B7	3.48	1.09	0.682	0.580	0.228	0.065
LTSOI L07-802	FSS-SP-03, grid D2	4.25	2.32	0.652	1.01	0.136	0.013
LTSOI L07-806	FSS-SP-03, grid C2	2.10	0.785	0.530	0.834	0.150	0.028
LTSOI L07-881	FSS-SP-04, grid F3	1.64	1.42	0.692	0.594	0.194	0.075
LTSOI L07-886	FSS-SP-04, grid C5	0.925	0.596	0.283	0.559	0.136	0.042
LTSOI L07-890	FSS-SP-05, grid B1	1.03	1.48	0.733	0.539	0.173	0.070
LTSOI L07-902	FSS-SP-05, grid C1	0.749	0.627	0.302	0.592	0.157	0.051
LTSOI L07-914	FSS-SP-06, grid D2	1.80	1.62	0.789	0.691	0.199	0.073
LTSOI L07-916	FSS-SP-06, grid C1	1.09	0.730	0.345	0.738	0.188	0.060

Similarly, all of the smear samples for the determination of removable alpha and removable beta contamination, were also less than the site acceptance criteria, as summarized in the following table:

Table 7 – Final Status Survey Smear Sample Analytical Results

Smear Data in Disintegrations per minute per 100 Centimeters Squared (dpm/100 cm^2)							
Sample ID	**Description**	**Alpha**			**Beta**		
		Result	**Std Error**	**MDC**	**Result**	**Std Error**	**MDC**
FSS-SP-01-A1	West FSS, grid A1	-0.114	0.619	1.42	5.75	10.9	18.5
FSS-SP-01-A2	West FSS, grid A2	0.044	0.964	2.37	9.58	15.9	27.0
FSS-SP-01-A3	West FSS, grid A3	-0.220	0.813	2.37	10.22	15.9	27.0
FSS-SP-01-A4	West FSS, grid A4	1.10	1.41	2.37	21.1	16.3	27.0
FSS-SP-01-A5	West FSS, grid A5	-0.220	0.813	2.37	8.63	15.8	27.0
FSS-SP-01-A6	West FSS, grid A6	0.704	1.32	2.50	6.12	16.0	27.3
FSS-SP-01-B1	West FSS, grid B1	0.308	1.09	2.37	-2.88	15.4	27.0
FSS-SP-01-B2	West FSS, grid B2	0.044	0.964	2.37	7.35	15.8	27.0
FSS-SP-01-B3	West FSS, grid B3	-0.114	0.619	1.42	6.39	11.0	18.5
FSS-SP-01-B4	West FSS, grid B4	0.044	0.964	2.37	4.47	15.7	27.0
FSS-SP-01-B5	West FSS, grid B5	0.308	1.09	2.37	10.9	15.9	27.0
FSS-SP-01-B6	West FSS, grid B6	0.967	1.42	2.50	17.6	16.4	27.3
FSS-SP-01-D5	West FSS, grid D5	0.923	1.18	1.94	5.75	16.1	27.6
FSS-SP-01-	West FSS, grid D6	0.449	0.640	1.12	2.68	11.1	19.0

Smear Data in Disintegrations per minute per 100 Centimeters Squared (dpm/100 cm^2)							
Sample ID	**Description**	**Alpha**			**Beta**		
		Result	**Std Error**	**MDC**	**Result**	**Std Error**	**MDC**
D6							
FSS-SP-02-A1	East FSS, grid A1	0.132	0.776	1.94	14.1	16.4	27.6
FSS-SP-02-A2	East FSS, grid A2	0.660	0.703	1.12	4.98	11.2	19.0
FSS-SP-02-A3	East FSS, grid A3	0.704	1.20	2.22	-7.24	15.7	27.7
FSS-SP-02-A4	East FSS, grid A4	-0.193	0.525	1.31	-37.8	10.3	19.1
FSS-SP-02-A5	East FSS, grid A5	0.528	1.08	2.12	8.52	16.2	27.7
FSS-SP-02-A6	East FSS, grid A6	0.000	0.790	2.12	14.9	16.5	27.7
FSS-SP-02-A7	East FSS, grid A7	0.000	0.790	2.12	-5.22	15.7	27.7
FSS-SP-02-B3	East FSS, grid B3	-0.088	0.799	2.22	-39.5	14.4	27.7
FSS-SP-02-B4	East FSS, grid B4	0.440	1.08	2.22	-41.7	14.3	27.7
FSS-SP-03-A1	South East center FSS, grid A1	-0.343	0.490	1.35	8.82	11.5	19.3
FSS-SP-03-A2	South East center FSS, grid A2	0.396	1.09	2.27	5.11	16.4	28.2
FSS-SP-03-A3	South East center FSS, grid A3	0.132	0.956	2.27	3.19	16.3	28.2
FSS-SP-03-B2	South East center FSS, grid B2	-0.088	0.799	2.22	-3.09	16.3	28.5
FSS-SP-03-B3	South East center FSS, grid B3	0.018	0.601	1.31	2.92	11.5	19.6
FSS-SP-03-D2	South East center FSS, grid D2	0.018	0.601	1.31	-9.35	11.2	19.6

Smear Data in Disintegrations per minute per 100 Centimeters Squared (dpm/100 cm^2)							
Sample ID	**Description**	**Alpha**			**Beta**		
		Result	**Std Error**	**MDC**	**Result**	**Std Error**	**MDC**
FSS-SP-03-D3	South East center FSS, grid D3	0.704	1.20	2.22	-3.41	16.3	28.5
FSS-SP-03-E1	South East center FSS, grid E1	2.07	1.66	2.17	11.3	16.3	27.6
FSS-SP-03-E2	South East center FSS, grid E2	-0.088	0.799	2.22	4.58	16.6	28.5
FSS-SP-03-E3	South East center FSS, grid E3	-0.088	0.799	2.22	-0.852	16.4	28.5
FSS-SP-03-F1	South East center FSS, grid F1	0.220	0.948	2.17	10.3	16.3	27.6
FSS-SP-03-F2	South East center FSS, grid F2	0.528	1.21	2.42	7.35	16.4	28.1
FSS-SP-03-F3	South East center FSS, grid F3	1.85	1.68	2.42	3.19	16.3	28.1
FSS-SP-03-G1	South East center FSS, grid G1	-0.308	0.603	2.17	18.0	16.6	27.6
FSS-SP-03-G2	South East center FSS, grid G2	1.32	1.51	2.42	5.75	16.4	28.1
FSS-SP-03-G3	South East center FSS, grid G3	-0.528	0.633	2.42	9.90	16.5	28.1
FSS-SP-04-A1	South West center FSS, grid A1	2.15	5.18	11.7	2.50	48.9	91.1
FSS-SP-04-A2	South West center FSS, grid A2	-0.308	0.603	2.17	6.18	16.1	27.6
FSS-SP-04-A3	South West center FSS, grid A3	0.484	1.08	2.17	0.426	15.9	27.6
FSS-SP-04-B1	South West center FSS, grid B1	-0.484	0.286	11.7	5.70	49.3	91.1
FSS-SP-04-B2	South West center FSS, grid B2	2.15	5.18	11.7	21.7	51.3	91.1
FSS-	South West	2.15	5.18	11.7	-10.3	47.3	91.1

Smear Data in Disintegrations per minute per 100 Centimeters Squared (dpm/100 cm^2)							
Sample ID	**Description**	**Alpha**			**Beta**		
		Result	**Std Error**	**MDC**	**Result**	**Std Error**	**MDC**
SP-04-B3	center FSS, grid B3						
FSS-SP-04-B4	South West center FSS, grid B4	2.15	5.18	11.7	-10.3	47.3	91.1
FSS-SP-04-D1	South West center FSS, grid D1	-0.484	0.286	11.7	-0.692	48.5	91.1
FSS-SP-04-D2	South West center FSS, grid D2	2.15	5.18	11.7	5.70	49.3	91.1
FSS-SP-04-D3	South West center FSS, grid D3	2.15	5.18	11.7	24.9	51.6	91.1
FSS-SP-04-D4	South West center FSS, grid D4	-0.484	0.286	11.7	-3.89	48.1	91.1
FSS-SP-04-E1	South West center FSS, grid E1	-0.484	0.286	11.7	-23.1	45.6	91.1
FSS-SP-04-E2	South West center FSS, grid E2	2.15	5.18	11.7	-16.7	46.4	91.1
FSS-SP-04-E3	South West center FSS, grid E3	-0.484	0.286	11.7	34.5	52.8	91.1
FSS-SP-04-E4	South West center FSS, grid E4	-0.484	0.286	11.7	-10.3	47.3	91.1
FSS-SP-04-F1	South West center FSS, grid F1	-0.484	0.286	11.7	34.5	52.8	91.1
FSS-SP-04-F2	South West center FSS, grid F2	-0.484	0.286	11.7	5.70	49.3	91.1
FSS-SP-04-F3	South West center FSS, grid F3	-0.484	0.286	11.7	37.6	53.1	91.1
FSS-SP-04-F4	South West center FSS, grid F4	-0.484	0.286	11.7	-10.3	47.3	91.1
FSS-SP-05-A1	North East center FSS, grid A1	-0.440	0.273	11.5	24.4	53.2	93.9
FSS-SP-05-	North East center FSS,	-0.440	0.273	11.5	85.1	59.8	93.9

Smear Data in Disintegrations per minute per 100 Centimeters Squared (dpm/100 cm^2)							
Sample ID	**Description**	**Alpha**			**Beta**		
		Result	**Std Error**	**MDC**	**Result**	**Std Error**	**MDC**
A2	grid A2						
FSS-SP-05-A3	North East center FSS, grid A3	-0.440	0.273	11.5	27.6	53.5	93.9
FSS-SP-05-B1	North East center FSS, grid B1	-0.440	0.273	11.5	11.7	51.7	93.9
FSS-SP-05-B2	North East center FSS, grid B2	-0.440	0.273	11.5	59.6	57.1	93.9
FSS-SP-05-B3	North East center FSS, grid B3	-0.440	0.273	11.5	14.9	52.0	93.9
FSS-SP-05-D1	North East center FSS, grid D1	-0.440	0.273	11.5	-4.31	49.7	93.9
FSS-SP-05-D2	North East center FSS, grid D2	-0.440	0.273	11.5	8.47	51.3	93.9
FSS-SP-05-D3	North East center FSS, grid D3	-0.440	0.273	11.5	18.1	52.4	93.9
FSS-SP-05-E1	North East center FSS, grid E1	-0.440	0.273	11.5	50.0	56.0	93.9
FSS-SP-05-E2	North East center FSS, grid E2	-0.440	0.273	11.5	40.4	55.0	93.9
FSS-SP-05-E3	North East center FSS, grid E3	-0.440	0.273	11.5	14.9	52.0	93.9
FSS-SP-05-F1	North East center FSS, grid F1	2.20	5.18	11.5	43.6	55.3	93.9
FSS-SP-05-F2	North East center FSS, grid F2	2.20	5.18	11.5	40.4	55.0	93.9
FSS-SP-05-F3	North East center FSS, grid F3	2.20	5.18	11.5	21.2	52.8	93.9
FSS-SP-06-A1	North West center FSS, grid A1	-0.440	0.273	11.5	-4.31	49.7	93.9
FSS-SP-06-A2	North West center FSS, grid A2	2.20	5.18	11.5	21.2	52.8	93.9

Smear Data in Disintegrations per minute per 100 Centimeters Squared (dpm/100 cm^2)							
Sample ID	**Description**	**Alpha**			**Beta**		
		Result	**Std Error**	**MDC**	**Result**	**Std Error**	**MDC**
FSS-SP-06-A3	North West center FSS, grid A3	-0.440	0.273	11.5	-10.7	48.9	93.9
FSS-SP-06-B1	North West center FSS, grid B1	-0.440	0.273	11.5	30.8	53.9	93.9
FSS-SP-06-B2	North West center FSS, grid B2	2.20	5.18	11.5	34.0	54.3	93.9
FSS-SP-06-B3	North West center FSS, grid B3	-0.440	0.273	11.5	14.9	52.0	93.9
FSS-SP-06-D1	North West center FSS, grid D1	-0.440	0.273	11.5	2.08	50.5	93.9
FSS-SP-06-D2	North West center FSS, grid D2	2.20	5.18	11.5	37.2	54.6	93.9
FSS-SP-06-D3	North West center FSS, grid D3	2.20	5.18	11.5	30.8	53.9	93.9

6.3 Unrestricted Release of Debris and Equipment

Surveys of alpha and beta surface contamination were performed on debris and equipment prior to release from the controlled area of the site. The surveys performed and the acceptance criteria were based on the guidance of FC 83-23, Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source or Special Nuclear Material, USNRC 1993). The general protocol used was as follows:

1. Perform a scanning survey of the item. Concentrate survey measurements on areas most likely to be contaminated. The fraction of the total area scanned is subjective, based on technician experience, an item's use history, and HP guidance. Typically, the scan frequency is a minimum of 10% of accessible surface areas.
2. Obtain static measurements (to determine total surface contamination) at locations with the highest potential for contamination. The number of survey points selected is subjective, based on technician experience, an item's use history, the results of the scan survey and HP guidance.
3. To determine removable surface contamination, using moderate pressure, swipe an area of 100 cm^2 (4-inch square area or equivalent) of the surface at the selected location. Smear surveys should be performed at the same location that static measurements of total contamination were performed.

4. Large Area Wipes (LAW), also commonly referred to by the trade name "Masslinn," may be used to supplement smear surveys for removable contamination. The use of LAWs should be documented on the survey form with the notation "LAW" or equivalent.
5. Smear samples should be counted using available scintillation or gas-flow proportional laboratory counters, when practicable. Field instruments may be used for smear counting at the discretion of the HP.

The survey protocol did not identify any debris or equipment requiring decontamination before release from the controlled area of the site. The physical nature of the contamination was in the form of discrete pieces of Above Action Level material. None of the AAL material was present in the debris or on any parts of the construction equipment, thereby permitting free release of both the debris and equipment.

6.4 Debris and Equipment Decontamination

Once free released, the debris was staged within the bermed area in the southeast corner adjacent to stockpiled BAL material for removal later by the City of Glen Cove. The construction equipment utilized to segregate the dredge spoils was cleaned using brooms and shovels to remove "gross" dirt from various areas of the equipment followed by a quick rinse with a water hose. The dirt removed from the equipment was placed in a BAL stockpile. The cleaning operation was performed on the concrete pad within the bermed area.

6.5 Air Sampling

A high volume air sample was taken each day spoils were handled. The sample on time, off time and flow rate were recorded. The sample filter was then counted for gross alpha activity and the fraction of the derived concentration value (DAC). The DAC is the radionuclide specific air concentration value that if breathed for 2,000 (occupational) hours in one year will result in the occupational exposure limit of 5,000 mrem/year. When the fraction of the DAC exceeds 0.1, DAC-hour tracking is required. None of the air samples exceeded this threshold. A summary of the air samples is provided in the following table. The DAC-hour calculations for each air sample are provided in Appendix E.

Table 8 – Air Sample Summary

Air Sample Record No.	Sample Date	Count Date	Flow Rate (cfm)	Elapsed Time (hr)	BKG Alpha (cpm)	BKG Beta (cpm)	Sample Alpha (cpm)	Sample Beta (cpm)	DAC-fraction
07-001	8/20/2007	8/21/2007	52	3.75	0.3	59.4	0.7	61.5	0.0048
07-002	8/22/2007	8/23/2007	40	3	0.1	55.9	0.7	57.6	0.0099
07-003	8/23/2007	8/24/2007	15	3	0.2	54.0	1.0	56.1	0.0389
07-004	8/24/2007	8/25/2007	12	3	0.3	53.1	1.0	52.2	0.0437
07-005	8/25/2007	8/27/2007	12	3	0.2	57.0	0.8	56.3	0.0311
07-006	8/27/2007	8/28/2007	15	3	0.2	53.8	1.1	56.1	0.0435
07-007	8/28/2007	8/30/2007	15	3	0.3	56.6	0.7	55.9	0.0226
07-008	8/29/2007	8/31/2007	15	3	0.4	56.4	0.8	57.3	0.0210
07-009	8/30/2007	8/31/2007	14	3	0.4	56.4	1.1	58.0	0.0413
07-010	8/31/2007	9/2/2007	13	3.25	0.3	55.1	1.0	57.2	0.0356
07-011	9/1/2007	9/3/2007	15	3	0.3	55.6	0.8	57.6	0.0233
07-012	9/2/2007	9/3/2007	15	3.25	0.3	55.6	1.1	58.3	0.0352
07-013	9/3/2007	9/5/2007	15	6.25	0.3	54.0	1.0	57.7	0.0157
07-014	9/4/2007	9/6/2007	15	3	0.4	56.4	0.8	58.8	0.0172
07-015	9/5/2007	9/10/2007	8	3.25	0.2	54.9	0.3	55.7	0.0102
07-016	9/6/2007	9/10/2007	15	3.75	0.2	54.9	0.2	54.6	0.0000
07-017	9/10/2007	9/11/2007	16	3.17	0.15	59.4	1.2	64.0	0.0428
07-018	9/12/2007	9/13/2007	17	3.17	0.2	53.6	0.6	57.4	0.0163
07-019	9/13/2007	9/17/2007	17	3.33	0.3	54.8	0.3	55.9	0.0012
07-020	9/14/2007	9/17/2007	7	4.67	0.3	54.8	0.9	57.4	0.0418
07-021	9/17/2007	9/19/2007	14	3.67	0.3	55.0	1.6	61.6	0.0578
07-022	9/18/2007	9/19/2007	13	4.83	0.3	55.0	3.1	61.4	0.0947
07-023	9/21/2007	9/24/2007	12	3	0.3	55.2	0.3	53.3	0.0019
07-024	9/22/2007	9/24/2007	28	3	0.3	55.2	0.2	53.3	0.0000
07-025	9/23/2007	9/24/2007	21	3	0.3	55.2	1.2	55.8	0.0328
07-026	9/24/2007	9/25/2007	28	3	0.3	52.2	1.9	57.7	0.0383
07-027	9/25/2007	9/26/2007	16	3	0.2	52.7	2.4	61.3	0.0940
07-028	9/26/2007	9/28/2007	16	3.5	0.2	52.4	1.3	54.5	0.0406
07-029	9/27/2007	9/28/2007	13	3.83	0.2	52.4	2.2	57.4	0.0857
07-030	9/28/2007	10/1/2007	16	3	0.2	53.1	0.2	54.2	0.0007

Air Sample Record No.	Sample Date	Count Date	Flow Rate (cfm)	Elapsed Time (hr)	BKG Alpha (cpm)	BKG Beta (cpm)	Sample Alpha (cpm)	Sample Beta (cpm)	DAC-fraction
07-031	9/29/2007	10/1/2007	17	3	0.2	53.1	0.4	54.7	0.0055
07-032	10/1/2007	10/3/2007	14	3.83	0.1	53.2	0.9	55.1	0.0320
07-033	10/2/2007	10/3/2007	10	3	0.1	53.2	1.4	55.9	0.0691
07-034	10/3/2007	10/4/2007	15	4.17	0.3	52.6	2.1	58.8	0.0616
07-035	10/4/2007	10/8/2007	12	3.33	0.3	54.2	0.3	53.7	0.0000
07-036	10/5/2007	10/8/2007	17	4	0.3	54.2	0.3	55.2	0.0000
07-037	10/6/2007	10/8/2007	12	3.92	0.3	54.2	1.9	59.6	0.0671
07-038	10/8/2007	10/10/2007	10	3.33	0.2	54.0	0.5	55.4	0.0189
07-039	10/9/2007	10/11/2007	16	3	0.2	55.4	1.3	59.0	0.0459
07-040	10/17/2007	10/19/2007	11	6.5	0.2	53.2	1.4	58.8	0.0343
07-041	10/18/2007	10/20/2007	11	5.67	0.2	57.2	1.7	61.7	0.0483
07-042	10/19/2007	10/20/2007	19	2.25	0.2	57.2	0.4	59.0	0.0065
07-043	10/23/2007	10/24/2007	13	4.58	0.2	58.0	0.6	57.4	0.0117
07-044	10/29/2007	10/30/2007	17	3.5	0.2	54.4	0.5	58.2	0.0094
07-045	10/30/2007	10/31/2007	14	3.5	0.2	55.7	1.6	59.7	0.0600
07-046	10/31/2007	11/2/2007	6	3.17	0.3	55.8	1.0	59.6	0.0810
07-047	11/1/2007	11/3/2007	9	5	0.2	55.3	0.8	59.9	0.0420
07-048	11/2/2007	11/3/2007	13	3	0.2	55.3	0.5	57.4	0.0144
07-049	11/4/2007	11/7/2007	5	4	0.3	57.4	0.4	57.2	0.0105
07-050	11/5/2007	11/7/2007	5	4.33	0.3	57.4	0.3	58.9	0.0081
07-051	11/7/2007	11/8/2007	5	3	0.2	58.8	0.6	60.4	0.0467
07-052	11/8/2007	11/10/2007	7	3	0.3	57.0	0.6	56.9	0.0300
07-053	11/9/2007	11/11/2007	5	3	0.2	55.1	0.7	57.9	0.0677
07-054	11/10/2007	11/11/2007	5	4.5	0.2	55.1	0.8	58.9	0.0560
07-055	11/11/2007	11/12/2007	5	3	0.2	57.3	0.5	59.4	0.0420
07-056	11/13/2007	11/16/2007	5	4.5	0.1	47.5	0.8	42.8	0.0964
07-057	11/14/2007	11/16/2007	5	4.25	0.1	47.5	0.6	43.7	0.0493
07-058	11/15/2007	11/18/2007	5	4.5	0.1	40.5	0.4	41.8	0.0321
07-059	11/16/2007	11/19/2007	5	5	0.2	39.6	0.8	42.5	0.0463
07-060	11/19/2007	12/4/2007	5	4	0.1	37.9	0.2	53.4	0.0126
07-061	11/20/2007	12/4/2007	5	3	0.1	37.9	0.4	45.4	0.0410

URS also conducted perimeter air monitoring during the dredge spoil segregation activities to measure air borne particulates. Three air monitors were setup around the perimeter of the site. One monitor was positioned in the northeast corner of the site to measure particulate concentrations in that area due to the close proximity of neighboring operations to the site. The other two monitors were placed in upwind and downwind locations. URS experienced exceedences, on average, every two to three weeks. All of the exceedences were due to off site operations (e.g., road work, the concrete batch plant operation south of the site). The segregation activities did not generate any dust because the spoils were wet and did not dry completely during URS segregation operations.

7.0 Quality Control

The Quality Assurance Project Plan specified that a minimum of 5 percent of all samples submitted for laboratory gamma spectrometry (101 total samples) would be submitted for QC purposes. A QC set was formed for every 20 samples (5 percent) collected for a total of 6 sets containing 6 duplicate samples including one site background sample and its duplicate. The results of the QC sample set analyses were reviewed to assess the accuracy and precision of the laboratory counting system, as discussed below.

7.1 Duplicate Sample Analysis Results

The duplicate samples that were collected were submitted blind to the laboratory. A total of 6 duplicate samples were submitted as summarized in Table 8. The results of the duplicate samples were reviewed against the original analysis results. The relative percent difference (RPD) was calculated for each duplicate analysis (a RPD of no more than 35% is considered satisfactory for laboratory counting systems). The RPD results are presented in Table 9. One RPD result exceeded 35% (41%). Since the majority of the analytical results are very low, approaching the limits of detection, with large uncertainty values (as large as the result in some cases) a large RPD is not unusual. This is the case for the two samples yielding the 41% RPD. Both results are well below the acceptance criteria and either result would yield the same decision, meets acceptance criteria. Based on the duplicate sample analysis results, laboratory performance was satisfactory.

Table 9 - Duplicate Sample Analysis Results

Sample ID	Lift/ Description	Th-230 / Ra-226			Th-232 / Ra-228 / Ac-228		
		Result (pCi/g)	Unc. (pCi/g)	MDC (pCi/g)	Result (pCi/g)	Unc. (pCi/g)	MDC (pCi/g)
LTSOIL07-002	Site material sample	3.62	0.727	1.11	0.962	0.105	0.111
LTSOIL07-002dup	Site material sample	3.05	1.39	0.643	0.976	0.220	0.075
LTSOIL07-185	Lift 20	2.20	0.944	0.633	0.826	0.192	0.059
LTSOIL07-185dup	Lift 20	1.85	1.60	0.779	0.793	0.224	0.085
LTSOIL07-356	Lift 38	1.70	1.29	0.786	0.793	0.195	0.064
LTSOIL07-356dup	Lift 38	1.71	0.951	0.436	0.711	0.183	0.062
LTSOIL07-541	Lift 57	2.16	0.846	0.573	0.993	0.138	0.039
LTSOIL07-541dup	Lift 57	2.10	0.990	0.445	0.922	0.199	0.060

Sample ID	Lift/ Description	Th-230 / Ra-226			Th-232 / Ra-228 / Ac-228		
		Result (pCi/g)	Unc. (pCi/g)	MDC (pCi/g)	Result (pCi/g)	Unc. (pCi/g)	MDC (pCi/g)
LTSOIL07-731	Lift 75	0.606	0.635	0.729	0.553	0.154	0.049
LTSOIL07-731dup	Lift 75	0.757	0.684	0.330	0.629	0.145	0.061
LTSOIL07-916	Final Status Survey area SP-06	1.09	0.730	0.345	0.738	0.188	0.060
LTSOIL07-916dup	Final Status Survey area SP-06	1.55	1.53	0.750	0.486	0.216	0.081

Table 10 - Relative Percent Difference Calculations

Duplicate Set	Th-230 / Ra-226 RPD (%)	Th-232 / Ra-228 /Ac-228 RPD (%)
Site material sample	17.09	-1.445
Lift 20	17.28	4.077
Lift 38	-0.587	10.90
Lift 57	2.817	7.415
Lift 75	-22.16	-12.86
Final Status Survey area SP-06	-34.85	41.18

8.0 Pre-Final Inspection

A pre-final inspection was conducted on August 1, 2008. The following construction items were identified during the inspection:

- Fuel tank removal, and
- 10% Methane Calibration cylinder removal.

All identified items were addressed and completed by Wednesday, August 4, 2008.

The following persons were present for the pre-final inspection:

Edgard Bertaut (TDY Industries)
Ed Als (U.S. Environmental Protection Agency)
Jeff Calarie (URS Corporation)
Andy Lombardo (Safety and Ecology Corporation)

9.0 References

1. March 30, 2005 Record of Decision, Li Tungsten Corporation Superfund Site, Operable Unit Four – Glen Cove Creek, Nassau County, New York (2005 ROD)
2. Consent Judgment, US v. AGI-VR/Wesson, et al. of 2007
3. Remedial Action Work Plan for the Segregation and Management of Dredge Spoils
4. NUREG-1575, EPA 402-R-97-016, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)

10.0 Certification Statement

"I certify under penalty of law that this document and all attachments were prepared under my direct supervision or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."